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**TB CARE I**



**TB CARE I - ZIMBABWE  
Final Report**

**October 1, 2010 –December 31, 2014**

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**Cover photo:** *National launch of National Guidelines for Community Engagement in TB Prevention and Care, Cresta Lodge Harare (Netty Kamp)*

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## List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
APA	Annual Plan of Activities (October-September)
ART	Antiretroviral Therapy
CCM	Country Coordinating Mechanism
CN	Concept Note
CPT	Cotrimoxazole prophylactic Treatment
DHE	District Health Executive
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short Course
DRS	Drug Resistance Survey
DR-TB	Drug-resistant Tuberculosis
DST	Drug Susceptibility Testing
ETRR	Electronic TB Recording and Reporting system
FAST	Find cases Actively, Separate safely, and Treat effectively
GF	Global Fund
HCW	Health Care Worker
HIV	Human Immunodeficiency Virus
HSS	Health Systems Strengthening
IEC	Information, Education and Communication
IHC	Integrated HIV Care for Tuberculosis Patients Living with HIV
IJTLD	International Journal of Tuberculosis and Lung Disease
ITHC	Integrated TB-HIV Care
IPT	Isoniazid Preventive Therapy
KNCV	KNCV Tuberculosis Foundation
M&E	Monitoring and Evaluation
MOHCC	Ministry of Health and Child Care
NAP	National AIDS Control Program
NFM	New Funding Mechanism
NSP	National Strategic Plan
NTP	National Tuberculosis Control Program
NUST	National University of Science and Technology
OR	Operations Research
PEPFAR	President's Emergency Plan for AIDS Relief
PHE	Provincial Health Executive
PLHIV	People living with HIV
PMDT	Programmatic Management of Drug Resistance Tuberculosis
PPM	Public Private Mix
QUOTE	Quality of Care as seen through the Eyes of the Patient
RR	Rifampicin Resistant
ST	Specimen Transport
TB	Tuberculosis
TB CAP	Tuberculosis Control Assistance Program
TOT	Training of trainers
The Union	International Union Against Tuberculosis and Lung Disease
USAID	United States Agency for International Development
WHO	World Health Organization

## Executive Summary

TB CARE I support in Zimbabwe started in October 2010 as successor to the Tuberculosis Control Assistance Program (TB CAP), through funding provision from United States Agency for International Development (USAID). The lead partner was the International Union Against Tuberculosis and Lung Disease (The Union), with KNCV Tuberculosis Foundation (KNCV), World Health Organisation (WHO) and FHI360 as collaborating partners. The project scope and coverage increased from 5 rural provinces and 3 major cities in Annual Plan of activities Year 1 (APA1) to all 8 rural provinces by the end of the project over a life span of 4 years. The support covered 7 of the 8 TB CARE I technical areas namely, Universal and Early Access, Laboratories, Infection Control, Programmatic Management of Drug-resistant TB (PMDT), TB-HIV, Health Systems Strengthening, Monitoring and evaluation, Operations research and surveillance. Priority setting of the key interventions within these technical areas was informed by the programmatic gaps outlined in the National Tuberculosis (TB) Strategy. Implementation of the TB CARE I supported activities was through the National TB Control Program (NTP) at all levels, with technical support from the TB CARE I country office. This operational arrangement was chosen to ensure sustainability of the supported activities after the completion of TB CARE I. The cumulative funding support for the entire life cycle of the project was \$17,6 million, of which \$950,000 was from the President's Emergency Plan for AIDS Relief (PEPFAR).

The following are the key outcomes/achievements from the project support:

- TB CARE I in partnership with Riders for Health launched a pilot motorcycle specimen transport (ST) system in three major cities in 2010. The system was set up to transport sputum specimens for microscopy examination and other specimens for laboratory analyses. Following the successful pilot, the ST system was expanded to 24 districts with 42 motorcycles serving a total of 649 health facilities. This has improved access to laboratory diagnosis and follow up testing for TB and other endemic health conditions. In 2010, a total 38,663 specimens were transported; this figure increased by fourfold to 176,981 specimens in 2013. The turnaround times from sputum collection to receiving results in patients with positive microscopy or, more recently, GeneXpert MTB/RIF (Xpert) test results declined dramatically. Prior to the introduction of the ST system, the turnaround time in remote rural districts was two to three weeks and after the establishment of the ST system it is now down to only seven days. In urban settings, the turnaround time has been reduced from a week to one to two days. This is likely to contribute to prompt diagnosis and early treatment of TB patients thereby reducing transmission. The percentage of new pulmonary TB cases without initial smear investigations above the age of five years reduced from 19% in 2010 to 9% in by mid-year of 2014. The ST system also carries follow up sputum for treatment monitoring which is critical for defining treatment outcomes, particularly cure rates. The cure rate improved from 71% in 2010 to 75% in by mid-year of 2013. Future investments should consider making the system nation-wide and advocating for the Ministry of Health and Child Care (MoHCC) to take it over to ensure universal and early access to diagnosis.
- Zimbabwe has successfully rolled out a nurse-led decentralized and integrated TB-HIV care model in 17 urban communities, involving a total of 23 primary health care facilities. The facilities received a package of assistance from TB CARE I, which included capacity building of health care workers (HCWs) in collaborative TB-HIV services and clinical management of patients with both HIV infection and TB. This support facilitated the provision of a comprehensive package of joint TB-HIV services at the facilities, including decentralized TB and HIV diagnostics, TB treatment and HIV care/antiretroviral therapy (ART) services, and contributed towards sustained gains in the key TB-HIV service indicators. The percentage of TB patients with recorded HIV results increased from 90% (January – March 2013) to 98% (July to September 2014). Similarly, the percentage of HIV-

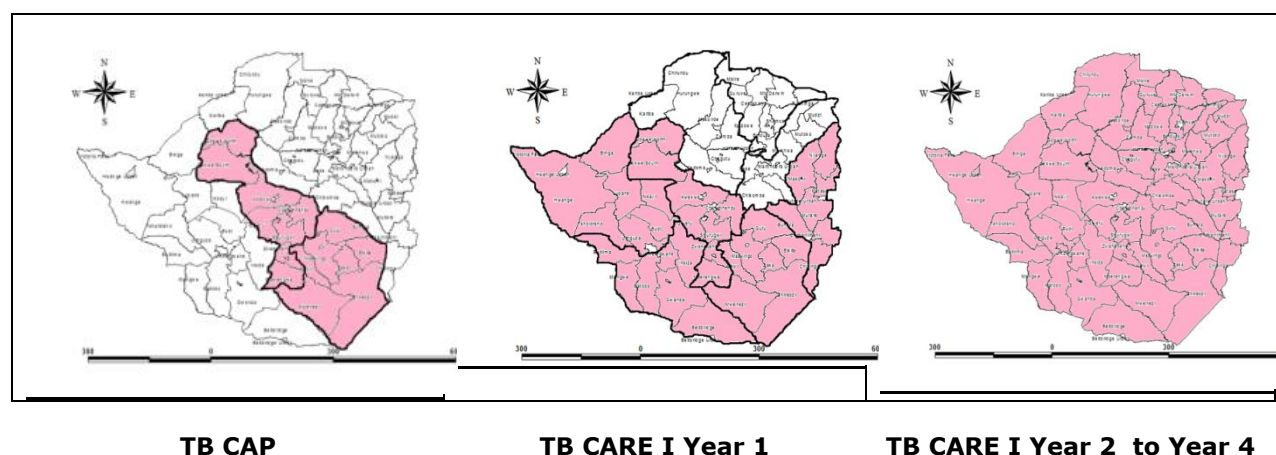
positive patients receiving Cotrimoxazole Prophylactic Therapy (CPT) increased from 86% to 91%, while the percentage of those HIV infected TB patients receiving ART increased from 70% to 84% in the same period. These outcomes demonstrate the feasibility of decentralization and integration of TB-HIV services. Extending this approach to the rural parts of the country should be considered beyond TB CARE I support.

- TB CARE I supported the development of a guide on the collection, analysis and use of TB data for health workers at all levels. The guide took into consideration the revised national TB recording and reporting tools based on the new framework and definitions by WHO of 2013 also supported through TB CARE I. An inaugural pilot training based on the *Data Collection, Analysis and Use Guide* was supported to train a total 35 provincial managers in order to strengthen TB surveillance and improve the capacity to analyse and use data for the management of the TB program at all levels. TB CARE I also supported development of the Electronic TB Recording and Reporting (ETRR) system. This was done locally by the NTP in collaboration with the National University of Science and Technology (NUST). The introduction of the ETRR was necessary to serve the needs of a highly mobile TB patient population in the country; reduce the need for multiple entries on multiple forms and to avoid duplication through use of a unique personal identifier. It is critical for the country to operationalize and roll out the ETRR and the *Data Collection Analysis and Use Guide* beyond TB CARE I support, as health services at all levels need updated and reliable information to strengthen TB patient and program management.
- The Programmatic Management of Drug Resistant TB (PMDT) was established with the support of TB CARE I in Zimbabwe. For the first time the PMDT guidelines with the training materials were developed followed by capacity building of health care workers at all levels of care. Rapid diagnostic molecular technology (Xpert MTB/RIF) was scaled up through TB CARE I support and its use has resulted in a sustained increase in the number of diagnosed cases with drug-resistant TB (DR-TB) strains. The number of cases with DR-TB strains detected has increased almost 10 fold, from 40 in 2010 to 393 in 2013. The proportion of diagnosed MDR-TB patients initiated on treatment has risen from 70% in 2010 to 89% in 2013. To date, a total of 62 Xpert machines have been installed across the country, of which 26 were procured through TB CARE I. Xpert implementation has contributed to more accessible and rapid tests for identify patients with Rifampicin-resistant TB (RR-TB) and/or MDR-TB . Current efforts to scale up use of Xpert should be complemented by investments in laboratory capacity for 1<sup>st</sup> and 2<sup>nd</sup> line drug susceptibility testing (DST) in order to accurately define resistance for each patient to provide appropriate treatment.
- TB CARE I provided technical assistance to the country to secure additional funding for the national TB and TB-HIV response. In Year 2, TB CARE I supported a workshop to develop an application for Global Fund (GF) interim funding of \$5.0 million, which was subsequently approved. In Year 3 and Year 4, TB CARE I supported external consultancies for the situation analysis, epidemiological and impact assessment for updating the National TB Strategic Plan (2015 – 2017), which were prerequisites for the country to access GF funds under the New Funding Mechanism (NFM). Additional support was provided for stakeholder consultation meetings for the initial processes leading to the development of the Concept Note (CN). Throughout the CN development, TB CARE I local staff played a major leading role in providing technical assistance. In September 2014, the CN was approved for grant negotiation and the committed funding available for the implementation period 2015 to 2017 is US\$ 38,789,240.

## Introduction

The objectives of the Zimbabwe TB CARE I project were to strengthen the NTP's ability to provide policy direction and coordinate program implementation, and support delivery of TB services. The project scope and coverage increased from 5 rural provinces and 3 major cities in Year 1 to cover all the 8 rural provinces and 3 major cities in Year 3 through to Year 4 (figure 1). The population coverage increased from 9,035,620 to 13,350,167. TB CARE I project was coordinated by The Union, with KNCV, WHO and FHI360 as collaborating partners. The supported activities were based on NTP priorities developed with the partners, including TB CARE I. The Union as lead partner for TB CARE I employed technical staff who worked closely with the NTP technical staff, including a PMDT technical officer seconded to the NTP.

**Figure 1: Map of Zimbabwe showing expansion of supported areas from TB CAP to TB CARE I**



The TB CARE I project planning and implementation was aligned to the National TB Strategic Plan 2010-2014. The broad strategic areas of the national strategic plan were:

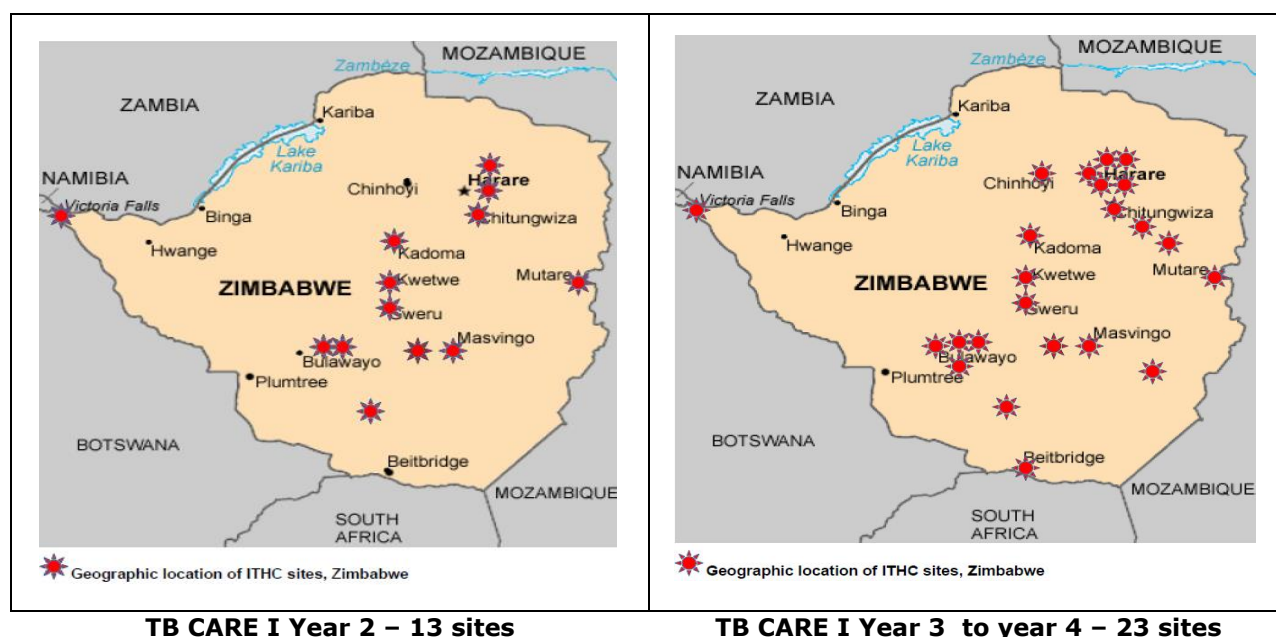
- To expand and enhance access to and provision of high-quality DOTS.
- To enhance coordination and implementation of TB-HIV collaborative activities.
- To effectively prevent, control and manage multidrug-resistant TB.
- To contribute towards the strengthening of health systems.
- To promote partnerships with other care providers and stakeholders.
- To empower people with TB and their communities.
- To promote operations research.
- To promote the development of adequate and sustainable human resources capacity for the NTP at the National, Provincial, District and Facility levels.

The Zimbabwe TB CARE I program collaborated strongly with the national efforts and strategic plan priorities by focusing on 7 of the 8 TB CARE I technical areas namely, Universal and early access, Laboratories, Infection Control, PMDT, TB-HIV, Health Systems Strengthening (HSS), Monitoring and evaluation (M&E), Operations research (OR) and surveillance.

All planned TB CARE I supported activities were implemented by the NTP staff and health workers at the provincial/city, district and primary levels of health care, while the TB CARE I provided technical, material and financial support. Additional funding was received from PEPFAR to support the roll out of

integrated TB-HIV care after a successful pilot project in Harare and Bulawayo. The model was introduced in 13 urban primary health clinics in Year 2 and a further 10 sites in Year 3 resulting in a total of 23 clinics in 17 local authorities (figure 2). The funding from PEPFAR was only available for the first 2 years and TB CARE I took over the support for the rest of the period. A total of 14 Xpert machines were also procured through PEPFAR funding to complement 12 machines acquired through TB CARE I support.

**Figure 2: Map of Zimbabwe showing the TB CARE I/PEPFAR supported Integrated TB-HIV care (ITHC) sites**



Throughout the life span of TB CARE I the following overarching elements were applied:

- Collaboration and coordination - The planning, implementation and monitoring of TB CARE I supported activities have been a collaborative process with the NTP providing leadership in defining priority gaps while ensuring engagement of other key partners in the national response. The processes took into account existing funding mechanisms, such as GF to ensure strong synergies and avert duplication.
- Access to TB services for all people - The TB CARE I expansion to cover the whole country was a means to address the gaps in universal access to TB services with particular emphasis on reaching out to vulnerable communities such as people in remote districts and people living with HIV (PLHIV).
- Responsible and responsive management practices - Quarterly and annual management reports were produced to monitor and document progress. Such reports were used to inform decisions to address emerging challenges and guide the next steps. Annual external audits were carried out to ensure adherence to the principles of corporate governance.
- Evidence-based project M&E - TB CARE I supported the activities aimed at strengthening the NTP M&E system, such as revision of the recording and reporting tools, data-driven support supervision visits, regular district, provincial/city and national review meetings of TB control program performance, and promoting local use of TB and TB-HIV data for decision making and development of an ETRR.



## Core Indicators

TB CARE I had seven core indicators that the program as a whole was working to improve across all countries. Table 1 summarizes the core indicator results across the life of the project for TB CARE I - Zimbabwe, as well as the Tuberculosis Control Assistance Program (TB CAP), the precursor to TB CARE I, which our coalition also led.

**Table 1: TB CARE I core indicator results for Zimbabwe**

Project year		C1. Number of cases notified (all forms)	C2. Number of cases notified (new confirmed)	C3. Case Detection Rate (all forms)	C4. Number (and%) of TB cases among healthcare workers	C5. Treatment Success Rate of confirmed cases	C6. Number of MDR cases diagnosed	C7. Number of MDR cases put on treatment
TB CAP	2008	39348	9860	40	U	74	U	U
	2009	46453	10195	50	U	78	U	U
	2010	47557	11654	53	U	81	40	28
TB CARE I	2011	41305	12596	48	U	81	118	64
	2012	38720	12163	46	U	81	149	105
	2013	35566	11404	42	U	*83	393	351

Source: C1, C2 & C5 from Global TB Reports (2009-2013)

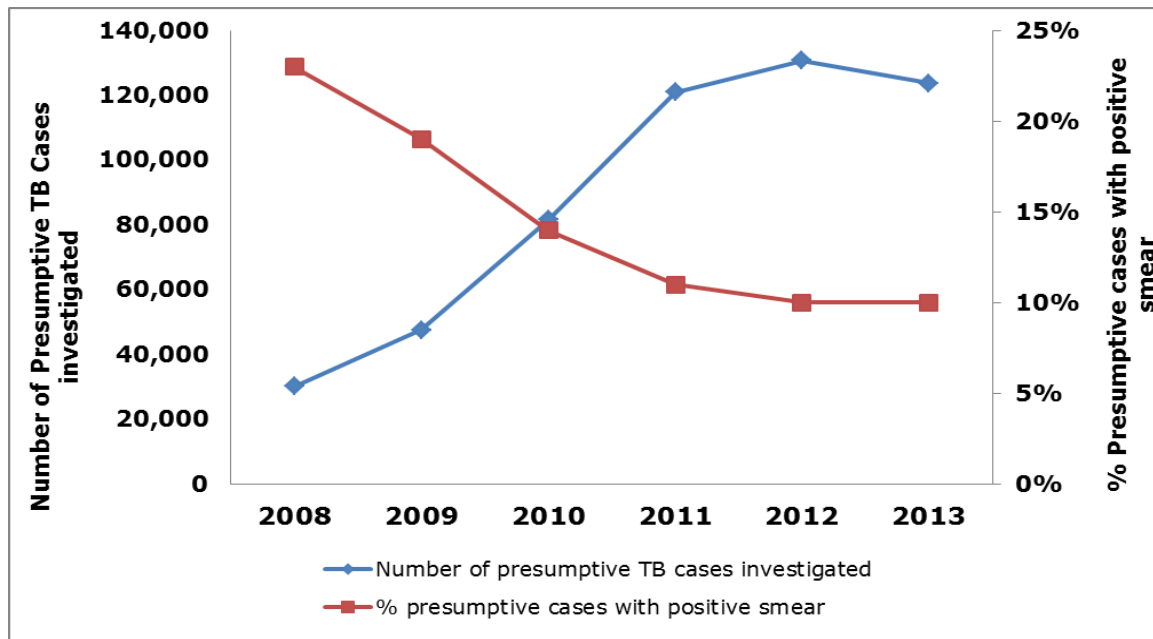
\*2013 outcomes from NTP surveillance data and only for Jan Jun cohort

TB CARE I invested in a number of activities, which were expected to boost TB case finding, these activities included training, the ST system, introduction of Xpert testing, and community TB care. There was a sustained increase in sputum smear examinations (Figure 3) but the number of notified cases and the estimated TB case detection rate have declined. Current trends in case detection are based on WHO estimates, which may not be a true reflection of the epidemiological changes with increased ART coverage over time. There is an on-going prevalence survey whose results will assist in identifying the actual burden. There was a marked increase in the number of MDR-TB cases diagnosed and the gap between diagnosis and treatment has significantly narrowed. This increase can be partially attributed to the increasing use of Xpert and the extensive PMDT training carried out in the country with TB CARE I support.

Routine screening of health workers for TB was not part of the NTP recording and reporting system during the period under review. However, the tools were revised to capture this information and were not yet in use by the end of the project cycle.

Treatment success rate for sputum positive patients has remained stagnant although it has slightly improved for the first half of 2013. The low treatment success has been largely due to high death rate. Significant gains in ART and CPT uptake did not translate to an expected reduction in the death rates, although other indicators, such as, percentage of patients lost to follow up and not evaluated have reduced. The high death rates are more pronounced in a few provinces in the southern region of the country and there is need to gather more evidence on the causes.

**Figure 3: Number of presumptive TB patients and percentage of patients with positive sputum smear microscopy (SSM) tests, 2007 -2013**



## Universal Access

The expected results of the support in this technical area were: increased demand for and use of high quality TB services and improved satisfaction in the services provided; increased quality of TB services delivered by all care providers and reduced patient and service delivery delays. The interventions focused on patient centered approaches and community TB care. The planned activities in this technical area were implemented through the support of The Union, KNCV, WHO and FHI 360. This technical area was consistently supported throughout TB CARE I project cycle.

**Table 1: Technical Outcomes (Universal Access)**

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
1.1.1	Number of facilities where quality of services is measured	<b>Indicator Value:</b> Number <b>Level: National</b> <b>Source:</b> NTP and TB CARE project office	0 (2010)	23	14
1.1.3	TB personnel trained on the Patients' Charter	<b>Indicator Value:</b> Number <b>Level: National</b> <b>Source:</b> NTP/WHO	0 (2013)	570	150 (50 males, 100 females)
1.2.1	Private providers collaborating with the NTP	<b>Indicator value:</b> Number <b>Level:</b> National <b>Source:</b> NTP/WHO	U*	U*	U*
1.2.2	TB cases diagnosed by private providers	<b>Indicator value:</b> Number <b>Level:</b> National <b>Source:</b> WHO	U*	U*	U*
1.2.3	Status of PPM implementation	<b>Indicator Value:</b> Based on the scoring system below: 0= The country has no PPM activities 1= The country has piloted at least one PPM intervention 2= The country has a PPM strategy 3= The country has started implementation of the PPM strategy <b>Level:</b> National <b>Source:</b> NTP	3	3	3
1.2.4	Children younger than 5 (contacts of sputum smear positive adults) that were put on IPT	<b>Indicator Value:</b> Number <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> NTP, TB CARE project, WHO	186 (2013)	220	236
1.2.5	Childhood TB approach implemented	<b>Indicator value:</b> Score based on the following: 0 = Childhood TB is not mentioned in the NTP Strategic Plan 1 = Childhood TB is mentioned in the strategic plan, but no activities are	3 (2010)	3	3

		implemented on childhood TB 2 = Childhood TB activities are being piloted or are implemented in select sites 3 = Childhood TB is an integral part of the NTP strategic plan and regular activities. <b>Level:</b> National <b>Source:</b> NTP			
<b>1.2.6</b>	Number of TB cases (all forms) diagnosed in children 0-4 years old	<b>Indicator Value:</b> Number <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP, TB CARE project, WHO	2,133 (2010)	1,600	1,793
<b>1.2.9</b>	Population covered with CB-DOTS	<b>Indicator Value:</b> Percent <b>Numerator:</b> Population size in the area(s) where CB-DOTS is being implemented <b>Denominator:</b> Total population <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP and TB CARE project	U	100%	100%
<b>1.2.10</b>	Health facilities offering CB-DOTS services	<b>Indicator value:</b> Percent <b>Numerator:</b> Number of health facilities providing CB-DOTS services <b>Denominator:</b> Total number of health facilities in the area <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP and TB CARE project	100% (1,566/ 1,566) 2013 All primary health care facilities but not meeting the definition	100%	100% (1,566/ 1,566)

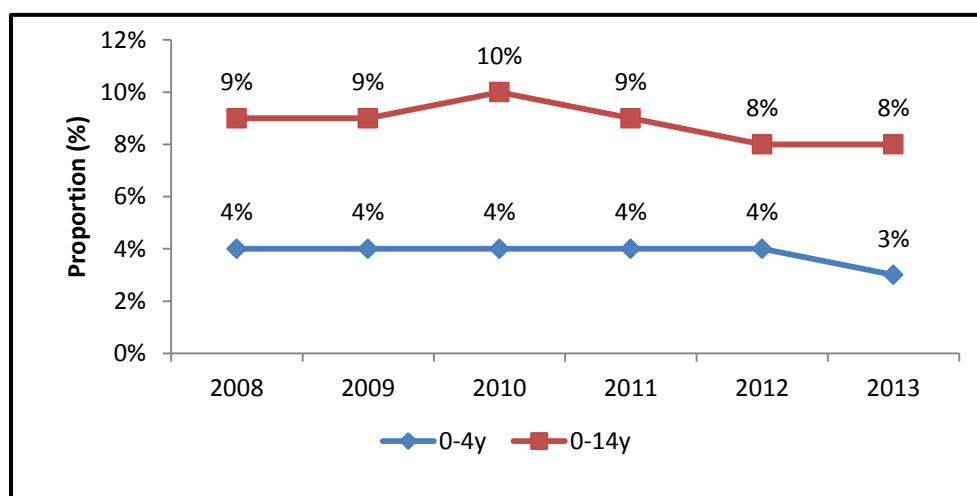
*\*NTP has not carried out a mapping exercise for the private sector providers and it was discovered that the baseline in Year 3 was rather in accurate. The activity which was planned to achieve the target of 27 was cancelled to due delays in the finalization of the country PPP operational plan.*

## Key Results

- In Year 4 a preliminary assessment of the quality of service was conducted which was used to adapt the generic Quality of Care as seen through the Eyes of the Patient (QOUTE) TB tools to the local context. However, the project was implemented in only 14 out of the planned 26 because of delays in the approval processes of the research protocol by the local health research ethics council. The activity was ongoing in one province (Bulawayo City) in 10 health facilities by the end of the reporting period. To further strengthen quality of service, 12,000 Patients Charter booklets and 4,000 posters were printed and distributed in all the provinces. Orientation of health care workers on the Patients Charter reached only 150 health workers out of a target of 570 because of the delays in printing.

- In Year 1, TB CARE I provided technical support during the NTP external program evaluation. One of the key recommendations was the need to strengthen PPM. In Year 3, TB CARE I had planned to support coordination activities between the Private sector and the NTP, however, this could not be accomplished because the first country PPM guidelines supported through GF were not ready until Year 4. Thus PPM remains an important gap to be addressed in future plans.
- Childhood TB has been an integral part of the NTP work and TB CARE I support. In Year 2, 29 medical officers from district hospitals were trained in pediatric TB case management. These were expected to mentor more health workers from their facilities on the appropriate identification and management of childhood TB cases. In Year 4, a pediatric ART training was conducted for health workers in Harare City to strengthen management of common opportunistic infections, such as TB. Despite the investment in pediatric TB, case finding of childhood TB cases the proportion of children, remained fairly constant over the last 5 years, with an apparent chronic under-diagnosis of children. The proportion of childhood TB cases notified has stagnated between 8% - 9% (Figure 4) justifying the need to prioritize childhood TB in future investments.

**Figure 4: Percentage of childhood TB cases by age of all notified TB cases by year from 2009-2013**



- In Year 2, a total of 1,036 community TB treatment supporters were mobilized in 10 districts. The mobilization activities focused on updating them on patient support and elucidating existing practices and challenges in the implementation of community TB support, with a view to inform the development of the national guidelines. In Year 4, the National Guidelines for Community Engagement in TB Prevention and Care were developed and launched. This document provides guidance on how to involve and collaborate with communities to contribute to early TB case detection and quality patient-centered TB services. Following the finalization of the guidelines, training materials on community TB care were developed and used to train 9 national trainers who cascaded the training to 25 trainers at a community level in Midlands Province. The national trainers are expected to support the roll out of community TB care country wide, which has been planned to be carried out with support from the GF. Other notable activities which were carried out to strengthen community TB prevention and care included the development, printing and distribution to all provinces of IEC materials (3000 posters and 6000 fact sheets and pamphlets) in 2013 and 2014, in order to improve community awareness of TB signs and symptoms and translation of the community TB screening tool into local languages to facilitate TB screening and referrals at community level.

**Figure 5: Mobilisation meeting for DOT supporters in Tsholotsho district in Matabeleland North Province(Nqobile Mlilo)**



## Laboratories

The aim of TB CARE I support was to strengthen capacity, availability and quality of laboratory testing to support the diagnosis and monitoring of TB patients, and facilitate optimal use of new approaches for laboratory confirmation of TB. The planned activities in this technical area were implemented through the support from The Union and KNCV. This technical area was supported from Year 2 to Year 4 through TB CARE I. The interventions focused on scale up of Xpert implementation and laboratory renovations at 7 ITHC sites and the Bulawayo City laboratory.

**Table 2: Technical Outcomes (Laboratories)**

#	Outcome Indicator	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
<b>2.2.1</b>	Confirmed link with a Supranational Reference Laboratory (SRL) through a memorandum of agreement	<b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> National Reference Laboratory	Yes (2012)	Yes	Yes (Copenhagen)
<b>2.2.2</b>	Technical assistance visits from a SRL conducted	<b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> National Reference Laboratory	Yes (2012)	Yes (2 per year)	Yes (1 visit)
<b>2.3.1</b>	Diagnostic sites offering advanced technologies for TB or drug-resistant TB	<b>Indicator Value:</b> Number <b>Level:</b> National and TB CARE areas <b>Source:</b> NTP and TB CARE	13 (2012)	51 (Gene Xpert)	62 (Gene Xpert) – 26 TB CARE I
<b>2.3.2</b>	Rapid tests conducted (Gene Xpert)	<b>Indicator Value:</b> Number of tests <b>Level:</b> TB CARE areas <b>Source:</b> NTP and TB CARE	11,829 (2012)	102,000	39,330
<b>2.3.3</b>	Patients diagnosed with Xpert	<b>Indicator Value:</b> Number <b>Level:</b> TB CARE areas <b>Source:</b> NTP and TB CARE	1,797 (2012)	16,320	5,660

## Key Results

- TB CARE I started supporting Xpert implementation in Year 2 by procuring 3 machines which were installed in the provincial hospitals (Manicaland, Masvingo, Matabeleland North). In Year 3, 7 more machines were procured and an additional 14 machines were procured in Year 4 with funding from PEPFAR (Core Project C2.21). Another Core project (C5.13) supported the procurement of 2 more machines in Year 4 bringing the total number of TB CARE I-supported machines to 26. By the end of APA 4, a total of 62 machines were in use in the country with the remainder being procured by the MOHCC and other partners. Sites selected were high volume provincial and district hospitals. Onsite trainings on machine use and patient eligibility (use of algorithms) were conducted with support from the local service provider. A total of 49,500 Xpert cartridges were procured through TB CARE I funding during the period of project implementation. The support from TB CARE I and PEPFAR in rapid diagnostic technology has resulted in a sustained increase in the number of

performed Xpert tests and DR-TB case detection (Table 4). The results of Xpert tests conducted and patients diagnosed with Xpert fell far short of Year 4 targets. This was due to the fact that the targets were based on optimal use of Xpert machines of at least 2,000 tests per year per machine. The optimal use was not reached and there were reports of underutilization, especially in diagnosis of TB in PLHIV; a gap that has been identified to address in future investments.

**Table 3: Xpert MTB/RIF tests and results in TB CARE I supported sites (December 2012 to September 2014)**

Variable	Year 3	Year 4
Number of GX-4 instruments	18	26
Total number of tests done	1,958	11,054
Total successful tests	1,871	10,336
Total unsuccessful tests	87	718
Number of MTB+/RIF sensitive tests	386	1,814
Number of MTB+/RIF resistant tests	40	211
Percentage of tests with MTB detected	22.8%	19.6%
Percentage of rifampicin resistant strains	9.4%	10.3%
Percentage unsuccessful tests	4.4%	6.5%

- An advanced Cepheid training on Xpert installation, maintenance and troubleshooting was conducted in April 2014. A total of 23 (20 males, 3 females) laboratory personnel from all provincial laboratories were trained. This has strengthened maintenance and capacity to solve common problems, which reduced the down time of the machines. An evaluation of Xpert implementation is planned for late December 2014, which will provide further insight and guidance on how to continue to improve Xpert usage.
- TB CARE I supported renovations of Thorngrove Infectious Disease Hospital Laboratory in the City of Bulawayo in the first quarter of Year 4. As a result, more working space was created for laboratory personnel and this has improved infection control and increased the laboratory's capacity to process more presumptive TB specimens and conduct other tests associated with the management of HIV-positive patients. The laboratory is now operational and servicing the city with an estimated population of 700 000. It is equipped with a 16 module Xpert machine, and also runs, Ziehl Nelson Microscopy, Haematology, Biochemistry including Liver function tests and CD4 count testing.
- All 23 ITHC supported sites were equipped with PIMA Point of Care (POC) CD4 machines. CD4 testing is performed to establish a CD4 cell count for ART monitoring. A total of 10,619 tests were done in the first three quarters of Year 4. This has led to an average test turn-around time of less than 24 hours compared to previous delays of more than a week.



## Infection Control

The aim of the support was to increase the capacity of the NTP to scale up implementation of TB Infection control (IC) strategies and to conduct TB IC monitoring and measurement. The planned activities in this technical area were implemented through the support of The Union and FHI 360. This technical area was supported through PEPFAR and TB CARE I for the entire project cycle. The interventions focused on improvement of infection control in both health facilities and in communities.

**Table 4: Technical Outcomes (Infection Control)**

#	Outcome Indicator	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
3.2.1	"FAST" strategy has been adapted and adopted	<b>Indicator Value:</b> Score based on below: <b>0</b> = Country has not adopted the four core interventions for TB IC <b>"FAST (Find cases Actively; Separate safely and Treat effectively) strategy"</b> and there are no plans for implementation <b>1</b> = Country has adopted the four core interventions for TB IC ("FAST strategy") and there are plans for implementation but the implementation has not started <b>2</b> = <b>"FAST strategy"</b> has been piloted <b>3</b> = <b>"FAST strategy"</b> has been fully implemented at the national level <b>Level: National</b> <b>Source:</b> TB CARE project	1 (2010)	1	2
3.2.2	Facilities implementing TB-IC measures with TB CARE support	<b>Indicator Value:</b> Percent <b>Level: TB CARE geographic areas</b> <b>Source:</b> TB CARE project	100% (65/65) 2013	100% (65/65)	100% (65/65)
3.3.1	Annual reporting on TB disease (all forms) among HCWs is available as part of the national R&R system	<b>Indicator Value:</b> Yes/No <b>Level: National</b> <b>Source:</b> NTP; WHO	No (2010)	Yes	Yes*

*\*Only at the 23 ITHC sites*

## Key Results

- In 2014, the NTP recording and reporting tools were revised to incorporate infection control which will enable capturing and using infection control data at all levels with technical support from TB CARE I.
- In Year 2, TB CARE I supported the training of 3 health workers in advanced infection control facilitated by the Medical Research Council of South Africa in 2012. One of the participants is now a national facilitator of TB infection control trainings within the NTP; another is responsible for

infection control at the National TB Reference Laboratory while the third is a provincial level manager.

- The 23 ITHCs sites (see page 24 for more information) benefited from TB CARE I support on IC. All four components of the FAST strategy are being implemented in all 23 ITHC sites and the following key results were noted:
  - Establishment of clinic infection control committees and development of infection control plans. These have helped in bringing in infection control into the integrated TB-HIV care approach.
  - Renovations of the existing structures and erection of waiting shelters for TB patients has significantly improved ventilation and reduced overcrowding in the outpatients' waiting areas and consultation rooms in the above mentioned clinics (Figure 6).
  - TB symptom screening among HCWs at the 23 sites started in Year 3. A total of 292 health care workers were screened in Year 4 and three were diagnosed with drug-sensitive strains of TB of whom one died while on treatment. Contact tracing was conducted for all HCWs diagnosed with TB from which no additional cases were found. The screening process helped to ensure awareness among HCWs as well as identification and care of those with TB.
- A total 631 (201 males, 430 females) community DOT supporters were trained in community infection control in 2013 using a simplified checklist developed through TB CAP in 2010. The training increased awareness on TB infection control issues at community level and is likely to contribute to decreased household and community transmission of TB bacilli.

**Figure 6: Patient waiting shelter at Mtapu Clinic in Gweru (Sithokozile Hove)**



## Programmatic Management of Drug-Resistant TB

The overall aim of supporting this technical area was to improve diagnosis and treatment success of DR-TB. The planned activities in this technical area were implemented through the support from WHO and The Union. This technical area was supported from Year 1 to Year 4 through TB CARE I. Key interventions were development of PMDT guidelines, program coordination meetings and provincial and district capacity building for decentralization of PMDT.

**Table 5: Technical Outcomes (PMDT)**

#	Outcome Indicator	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
<b>C6</b>	Number of patients diagnosed with MDR- TB	<b>Indicator Value:</b> Number <b>Level: National</b> <b>Source:</b> MDR treatment register; NTP; WHO	40 (2010)	200	510* (All quarters of Year 4 – laboratory source)
<b>C7</b>	Number of patients diagnosed with MDR-TB started on treatment	<b>Indicator Value:</b> Number <b>Level: National</b> <b>Source:</b> MDR treatment register; WHO	28 (2010)	160	185 (First 3 quarters of Year 4)
<b>4.1.1</b>	TB patients, suspected of MDR-TB, dying between request for lab examination and start of MDR-TB treatment	<b>Indicator Value:</b> Percent <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> TB treatment register, laboratory register, MDR diagnosis register and MDR treatment register <b>Numerator:</b> The number of TB patients (Cat I, Cat II) with confirmed HR or R resistance, who died between the date of the lab request and the start of MDR treatment <b>Denominator:</b> The total number of TB patients (Cat I, Cat II) with confirmed HR or R resistance	U	0%	U
<b>4.1.2</b>	MDR-TB patients who are still on treatment and have a sputum culture conversion 6 months after starting MDR-TB treatment	<b>Indicator Value:</b> Percent <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> MDR treatment register treatment registers against reports <b>Numerator:</b> Number of MDR TB patients in a calendar year cohort who are still on treatment and had culture conversion latest at month 6 (having had 2 negative	U	75%	U

		sputum cultures taken one month apart and remained culture negative since) <b>Denominator:</b> Number of MDR TB patients in a calendar year cohort who were started on treatment			
<b>4.1.3</b>	MDR-TB patients who have completed the full course of MDR-TB treatment regimen and have a negative sputum culture	<b>Indicator Value:</b> Percent <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> MDR treatment register/WHO <b>Numerator:</b> Number of MDR TB patients in a cohort who completed a course of MDR treatment and who fit the WHO criteria for cure or completed treatment <b>Denominator:</b> Total number of MDR patients who started treatment in the cohort	U	85% (170/200)	81% (57/70) – 2011 cohort
<b>4.1.4</b>	A functioning National PMDT coordinating body	<b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> NTP	Yes (2012)	Yes	Yes

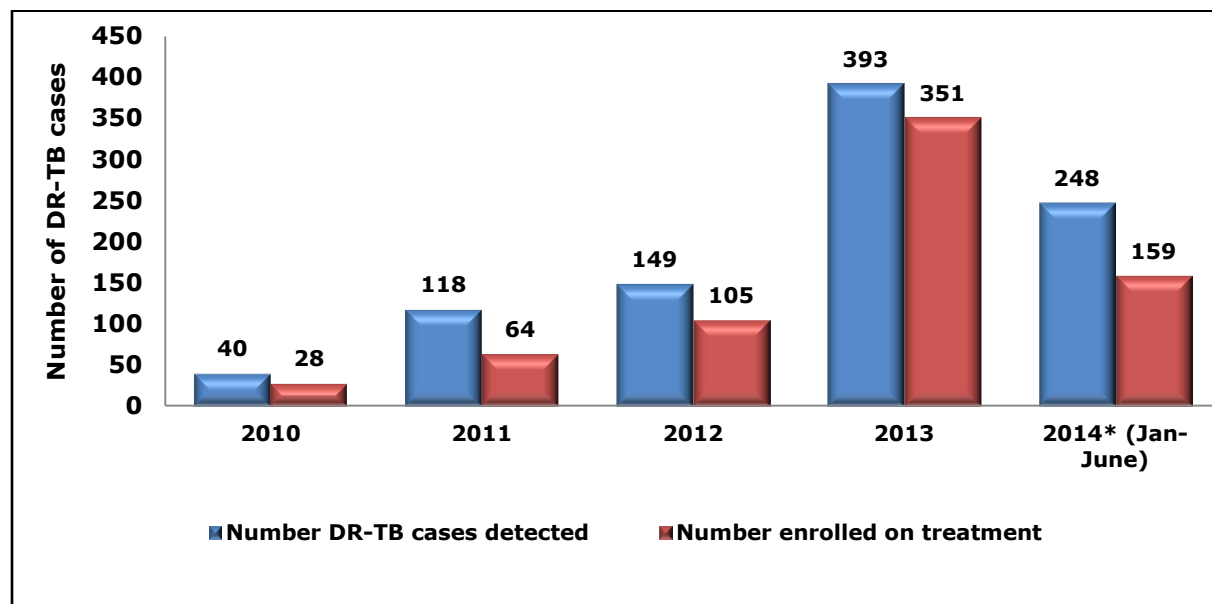
*\*This figure is based on Xpert test results, unavailability of recording and reporting tools may have led to a potential double reporting*

## Key Results

- A national PMDT committee was established through TB CARE I support. The mandate of this committee was to develop strategies and operational plans to guide the implementation and scale up of PMDT activities.
- TB CARE I co-funded the development of the first PMDT guidelines in the country in Year 1 and fully funded the subsequent revision in Year 4. The guidelines helped to standardize the provision of comprehensive DR-TB management in the country. In Year 3 TB CARE I co-funded the revision and printing of the PMDT operational plan and the development of the first national PMDT training manuals. These have been utilized country wide for all PMDT trainings.
- In Year 1 and Year 2, TB CARE I supported two comprehensive courses on the clinical management of DR-TB. A total of 61 technical managers (47 males and 14 females), who included medical officers; laboratory and pharmacy managers from all provinces, main cities and the University of Zimbabwe medical school were trained. Subsequently, in Year 3 and Year 4, a total of 263 health workers (126 males and 137 females) were trained in PMDT at the provincial and district levels. A total of 1,400 sets of PMDT training modules were developed and printed for use during the training sessions. The project supported post-training mentorship visits by national level technical officers to discuss PMDT implementation in the provinces and districts; review provincial PMDT indicators; assess post-training performance of the PMDT trained health workers; and to discuss the management of difficult cases in the provinces and districts. The training and follow up mentorship visits enabled the decentralization of PMDT from the initial two sites to all districts in the country leading to early treatment and care of patients with DR-TB. The current challenges pertain to maintaining good quality of care of patients on second line drugs and robust recording and reporting on these patients.

- The overall TB CARE I support for PMDT, including provision of Xpert testing, facilitated detection of MDR-TB patients who could have otherwise remained un-diagnosed and untreated leading to further spread in their families and communities.

**Figure 7: DR-TB patients detected and enrolled on treatment from 2010 to 2014**



- Unavailability of M&E tools for PMDT still pose a challenge in the collection of data for PMDT detection, enrolment and outcome indicators. There is still need to increase the capacity for the two reference laboratories to perform first and second line DST in order to confirm cases that are diagnosed RR-TB through Xpert testing.

## TB-HIV

The main expected result for this technical area were strengthened prevention of TB-HIV co-infection, improved diagnosis of TB-HIV co-infection and improved treatment of TB-HIV co-infected patients. The planned activities in this technical area were implemented through the support of The Union. This technical area was consistently supported by TB CARE I throughout the entire project cycle, with additional funding support from PEPFAR.

**Table 6: Technical Outcomes (TB-HIV)**

#	Outcome Indicator	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
<b>5.1.1</b>	New HIV patients treated for latent TB infection during reporting period	<b>Indicator Value:</b> Number <b>Level: National</b> <b>Source:</b> National AIDS Program (NAP)	0 (Oct 2012 – Sept 2013)	5,000	6,895 (from the 42 sites nationwide that have rolled out LTBI treatment to date)
<b>5.2.1</b>	HIV-positive patients who were screened for TB in HIV care or treatment settings	<b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP/NAP/WHO <b>Numerator:</b> Number of HIV-positive patients seen at HIV testing and counseling or HIV treatment and care services who were screened for TB symptoms at least once during year. <b>Denominator:</b> Total number of HIV-positive patients seen at HIV testing and counseling or HIV treatment and care services, over the same given time period.	100% (21,968 /21,968)	100% (25,000/ 25,000)	100% (61,145/ 61,145*)
<b>5.2.2</b>	TB patients (new and re-treatment) with an HIV test result recorded in the TB register	<b>Indicator Value:</b> Percent <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> NTP/NAP/WHO/TB CARE project <b>Numerator:</b> Total number of all TB patients registered over a given time period with an HIV test results recorded in the TB register. <b>Denominator:</b> Total number of TB patients registered over the same time period.	(88%) 41,062/ 47,557 2010	99% 46,000/ 46,500 (NSP targets)	<u>National</u> , Oct 2012 – June 2013: 93% (25,339/ 27,273)  <u>ITHC sites</u> , Oct 2013 -Sept 2014 97% (3,031/3,117)
<b>5.2.3</b>	TB patients (new and re-treatment) recorded as HIV-positive	<b>Indicator Value:</b> Percent <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> NTP/NAP/WHO/TB CARE project <b>Numerator:</b> Total number of	78% (31,849/ 41,602)  2010	73% (33,580/ 46,000) – NSP target	<u>National, Oct 2012 – June 2013:</u> 72% (18,222/ 25,339)

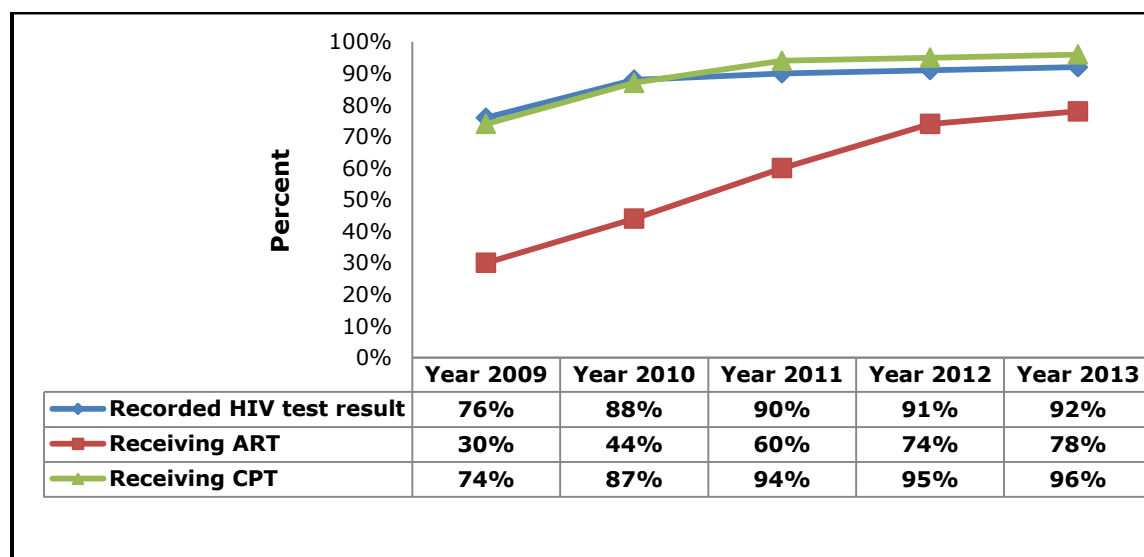
		all TB patients registered over a given time period who are recorded as HIV-positive <b>Denominator:</b> Total number of TB patients registered over the same time period			<u>ITHC sites,</u> Oct 2013 - Sept 2014  70% (2,134/3,031)
<b>5.2.5</b>	HIV-positive TB patients started or continued on antiretroviral therapy (ART)	<b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP/NAP/WHO/TB CARE project <b>Numerator:</b> All HIV-positive TB patients, registered over a given time period, who receive ART (are started on ART) <b>Denominator:</b> All HIV-positive TB patients registered over the same given time period.	44% (14,223/ 31,849) 2010	95% (31,901/ 33,580)	<u>National, Oct 2012 – June 2013:</u> 78% (14,194/ 18,222)  <u>ITHC sites,</u> Oct 2013 -Sept 2014 84% (1,795/2,134)
<b>5.2.6</b>	HIV-positive TB patients started or continued on CPT	<b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP/NAP/WHO/TB CARE project <b>Numerator:</b> All HIV-positive TB patients, registered over a given time period, who receive CPT(are started on CPT) <b>Denominator:</b> All HIV-positive TB patients registered over the same given time period.	88% (27,902/ 31,849) 2010	95% (3,1901/ 33,580)	<u>National, Oct 2012 – June 2013:</u> 97% (17,593/ 18,222)  <u>ITHC sites:</u> Oct 2013-Sept 2014 96% (2,054/2,134)

\* As more sites began to initiate ART, patients who were initially enrolled at the district hospitals were transferred to the sites for care and management thereby increasing the volume of patient flow at the peripheral level (hence a jump in numerator and denominator).

## Key Results

- Implementation and monitoring of TB-HIV activities were integrated into all technical areas through training workshops, Xpert implementation performance reviews, and support supervision among others. TB-HIV collaboration was strengthened over the years as demonstrated by an increase in the percentage of TB patients with a recorded HIV test result, increase in the percentage of HIV- positive TB patients receiving CPT and ART (Figure 8).The gradual increase can be attributed to a number of factors such as trainings in TB and TB-HIV case management, post training follow up support visits and attachment of nurses to existing centers of excellence. On site mentorship visits need to be strengthened to ensure universal access to HIV care.

**Figure 8: Trends in national TB-HIV indicators measured in TB treatment outcome summaries**

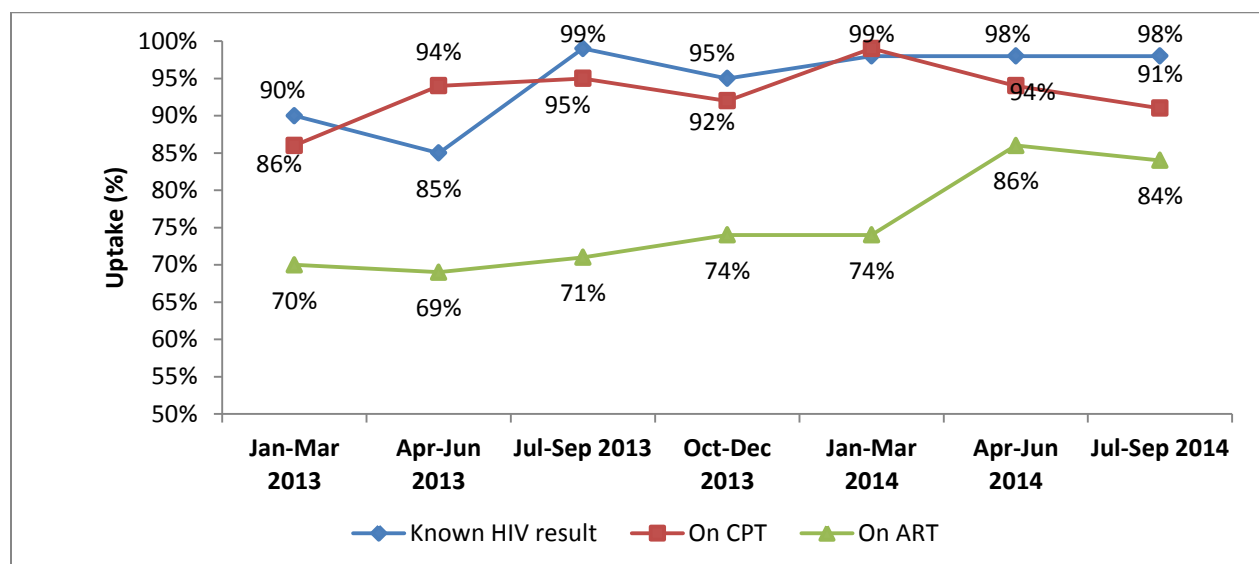


**Source: Routine NTP data 2009-2013 (Data for 2013 for 1st 2 quarters)**

- In Year 2, TB CARE I received additional funding from PEPFAR to support the decentralization of TB-HIV care to 13 primary health care clinics situated in 9 cities and towns. TB CARE I took over the support during the subsequent 2 years and extended services to an additional 10 sites in a total of 8 cities and towns.
- The approach for decentralized and integrated TB-HIV services was a follow up to a successful pilot called Integrated HIV Care (IHC) for TB Patients Living with HIV/AIDS and conducted in collaboration with the Health Services Departments of the Cities of Harare and Bulawayo from 2007 to 2012 which demonstrated the feasibility of nurse-led TB-HIV care, including ART initiation, at primary care settings. Constant support supervision visits, on-site mentoring and attachment to well-functioning clinics with established joint TB and HIV services capacitated the health workers at the primary health clinics and created stronger health teams. This model of care has contributed to improved outcomes as illustrated below (Figure 9).



**Figure 9: Service uptake for HIV testing, CPT & ART among TB patients at ITHC sites measured in the TB notification summaries)**



**Table 7: TB-HIV service uptake at 23 ITHC sites, January 2013 to September 2014**

Indicator	Jan-Mar 2013	Apr-Jun 2013	Jul-Sep 2013	Oct-Dec 2013	Jan-Mar 2014	Apr-Jun 2014	Jul-Sep 2014
Total TB patients registered	948	1,097	1,086	903	815	688	711
Patients with recorded HIV test result	850	937	1,074	861	795	675	700
Patients with HIV-positive test result	583	485	560	564	577	493	500
Patients receiving ART	409	333	399	520	428	425	422
Patients receiving CPT	499	457	532	564	570	464	456

## Health System Strengthening

The support in this technical area focused on strengthening health human resource capacity and scaling up specimen transport. The interventions focused on support supervision, procurement and deployment of motorcycles for specimen transportation as well as training of HCWs in TB including DR-TB; TB-HIV and M&E. The planned activities were implemented through the support of The Union.

**Table 8: Technical Outcomes (HSS)**

#	Outcome Indicator	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
<b>6.1.2</b>	Country Coordinating Mechanism (CCM) and/or other coordinating mechanisms include TB civil society members and TB patient groups	<b>Indicator Value:</b> Yes/No <b>Level: National</b> <b>Source:</b> CCM	Yes (2010)	Yes	Yes
<b>6.2.1</b>	TB CARE-supported supervisory visits conducted	<b>Indicator Value:</b> Percent <b>Level: TB CARE geographic areas</b> <b>Source:</b> TB CARE Project <b>Numerator:</b> Number of TB CARE-supported supervisory visits conducted. <b>Denominator:</b> Number of TB CARE-supported supervisory visits planned	0 (2010)	100% (126/126)	74% (93/126)
<b>6.2.2</b>	People trained using TB CARE funds	<b>Indicator Value:</b> Number <b>Level: National</b> <b>Source:</b> TB CARE project	1,700 637 males, 1,063 females (2013)	1,371	1,475 (578 males, 897 females)

### Key results

- A total of 5 provinces and their 37 districts were supported with support supervision, namely Midlands, Masvingo, Matabeleland North, Matabeleland South and Manicaland. Support supervision visits have been an integral part of TB CARE I support from 2010. Out of a planned 126 visits a total 93 (74%) were conducted in Year 4. The inability to achieve the target was mainly due to delayed accounting for funds advanced for travel and subsistence for support supervision by the provinces. As a financial security measure, disbursements could only be done after the previous disbursements were appropriately accounted for.

The following are the results observed and highlighted by the districts and provinces owing to support supervision:

- Patient-centered management – the visits are used as post-training follow up focusing on quality patient care and management including following up TB patients, who have not been tested for HIV, ensuring that they are counseled, tested for HIV, started on CPT and ART. Patient records are reviewed for follow up sputum specimen collection and adherence to appropriate treatment regimens.
- Improved data quality and use – routine data quality checks are conducted as part of the visits followed by data analysis, tabulation and use for decisions for improvement of TB patient care at local level. Supervisory visits provide an opportunity for mentoring health workers. As a result, ownership and local use of data is now an integral part of primary health care practice.
- TB and TB-HIV logistics supplies - as support supervision teams go out, they check stocks levels of critical commodities and carry with them buffer supplies to refill diminishing stocks such as reporting forms, IEC material, registers and N95 respirators.

**Figure 10: Support supervision visit at Biriwiri Clinic, Chimanimani district, Manicaland (Nqobile Mlilo)**



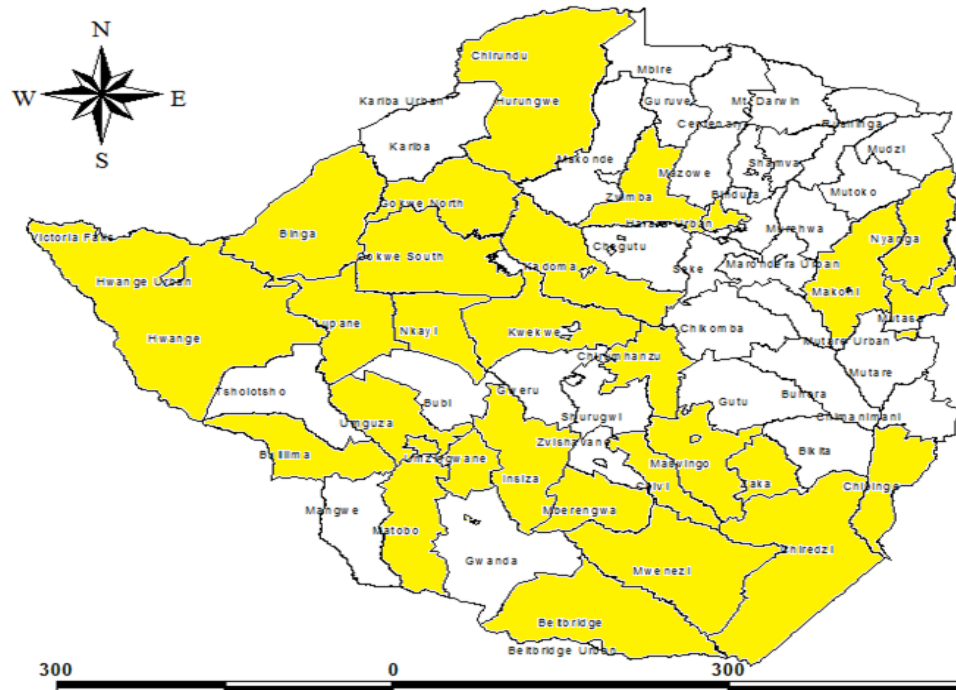
- TB CARE I has supported the national effort to develop the human resource capacity for TB control at all levels of health care. From Year 1 to date, a total of 5,187 health workers (2,053 males and 3,134 females); working at various levels of health services ranging from community to the national level were trained on different aspects of TB control (table 9). Sixty per cent of the trained HCWs were females. This support has strengthened the institutional capacity of the national response to comprehensively address program gaps in TB service delivery.
- TB CARE I supported the development of various management tools to facilitate smooth implementation of the National TB Control program. Developed tools included, among others, the National TB Control strategy (2015-2017), annual plans, annual reports, PMDT guidelines and training manuals.

**Table 9: Number of trained health workers by type of training and gender, Year 1-4**

Type of training	Number		
	Male	Female	Total
Community TB care	10	24	34
Training on Xpert installation, maintenance and troubleshooting	20	3	23
Xpert MTB/RIF use for enhanced TB case finding among PLHIV	31	54	85
Infection control for health workers	33	119	152
Community infection control	201	430	631
Clinical MDR-TB course	47	14	61
PMDT	126	137	263
International Management Development Program ( <i>Leading Management teams (29); Influencing networking &amp; partnership (1), Media &amp; communication (1)</i> )	20	11	31
Integrated TB-HIV, including adult OI/ART management	69	325	394
Pediatric TB case management	20	9	29
Pediatric ART management	3	21	24
International TB course held in Zimbabwe ('Arusha'course)	15	10	25
International TB-HIV course held in Zimbabwe	20	9	29
TB and TB-HIV case management (including ToTs)	1,147	1,667	2,814
Rapid HIV testing	3	38	41
ToT data collection, analysis and use for health care workers	21	14	35
Basic Computer training, including data entry	20	4	24
Electronic TB Recording and Reporting	240	241	481
Operations research training	7	4	11
<b>Total trained</b>	<b>2,053</b>	<b>3,134</b>	<b>5,187</b>

- In 2010, TB CARE I, in partnership with Riders for Health, piloted a motorcycle ST system in three major cities: the capital city of Harare; Bulawayo, the second largest city in the country; and the city of Chitungwiza. The system was set up to transport sputum specimens for microscopy examination and other specimens that require laboratory investigation such as dry blood spot for early infant diagnosis etc. Following the successful pilot the ST system was scaled up to 24 districts with support from TB CARE I. It currently consists of a total of 42 motorcycles which serve 649 health facilities - over 40% of the country's primary health care establishments (figure 11).
- The introduction of the ST system has improved access to laboratory diagnostics and other tests, including those for TB. In 2010, a total 38,663 specimens were transported using the system. This figure increased to 176,981 specimens in 2013, representing a four-fold increase. The proportion of TB specimens transported ranged from 24% to 44% of the transported specimens. The significant proportion of non-TB specimens transported is a notable contribution to overall health systems strengthening.
- The turnaround times from sputum collection to receipt of results declined dramatically. Prior to the ST system, two to three weeks elapsed from sputum collection to diagnosis in remote rural districts. The turnaround time in these areas is now down to only seven days. In urban settings,

**Figure 11: Geographic coverage of TB CARE I supported ST system in 2013**



- As a result of this efficient and effective ST system, the percentage of new pulmonary TB cases among patients aged 5 years and above, who had no initial smear investigations, decreased from a high of 19% in 2010 to 9% in the first half year of 2014.
- Also, as the ST system carries follow up sputum for treatment monitoring, the system may have contributed to the improvement in TB cure rate from 71% in 2010 to 75% in the first half of 2013.

### Other health systems strengthening activities

- Payment of subscriptions for the electronic version of the International Journal of Tuberculosis and Lung Disease (IJTLD) for the NTP head office, eight provinces and three cities has provided access to latest global TB research findings to inform evidence based TB program planning.

## Monitoring & Evaluation, Surveillance and OR

The aim of the M&E support was to strengthen TB surveillance, improve NTP's capacity to analyze and use quality data for the management of the TB program and improve capacity of NTP to perform operations research. The activities in this technical area were implemented through the support of The Union, KNCV and WHO. The main activities included the development of the ETRR, revision of recording and reporting tools, development of guidelines for data collection analysis and use, TB and TB-HIV control performance reviews, data quality assessments, Drug Resistance Survey (DRS), and supporting operations research activities.

**Table 10: Technical Outcomes (Monitoring & Evaluation, Surveillance and OR)**

#	Outcome Indicator	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y4	Y4
<b>7.1.1</b>	An electronic recording and reporting system for routine surveillance exists at national and/or sub-national levels	<b>Indicator Value:</b> Yes/No <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> NTP and TB CARE project.	No (2011)	Yes	No
<b>7.2.1</b>	Data quality measured by NTP	<b>Indicator Value:</b> Yes/No <b>Level: National</b> <b>Source:</b> NTP	Yes (2011)	Yes	Yes
<b>7.2.2</b>	NTP provides regular feedback from central to intermediate level	<b>Indicator Value:</b> Yes/No <b>Level: National and TB CARE geographic areas</b> <b>Source:</b> NTP and TB CARE Project	Yes (2011)	Yes	Yes
<b>7.3.1</b>	OR studies completed	<b>Indicator Value:</b> Number (of OR studies) <b>Level:</b> National or sub-national level <b>Source:</b> TB CARE project	2 (2013)	5	2 (cumulative Year 1-4)

## Key Results

- In 2011, the NTP with support from TB CARE I started to develop a guide on the collection, analysis and use of TB data for health workers at all levels. In the same year, the draft guidelines were piloted in three districts (Umzingwane, Makoni and Tsholotsho). The findings of the field evaluation conducted at the pilot sites in September 2013 suggested that it was feasible to implement the activities recommended and described in the guide. Since then the guide has been further revised and expanded, taking also into consideration the revised TB recording and reporting framework and definitions, routine data quality assessments. An inaugural pilot course was conducted in June 2014 to acquire further practical input from the participants before the finalization and printing. The guide will strengthen quality and reliability of TB data collected by health facilities, and facilitates meaningful monitoring of program implementation and OR that aims to use routine data.
- TB CARE I supported NTP to implement an electronic TB data recording and monitoring system: In 2013 TB CARE I NTP to conduct a study visit to Kenya to learn about the Kenya TB electronic system. Following this study visit, the NTP in collaboration with a local University - the National

University of Science and Technology (NUST) developed a local web based ETRR through TB CARE I support. This ETRR does not use proprietary software and its source code is owned by the NTP and can be modified as the need arises to respond to global classification updates as well as locally-defined needs and priorities. There are various potential benefits to be realized when TB data are captured and stored electronically compared to paper based reporting systems. The expected benefits are real time notification of cases, smooth patient follow up especially MDR TB patients who are followed up to 36 months, better tracking of transfer ins and transfers out, facilitation of case based data for research, reduction of transcription errors, integration to other systems, different access levels to enhance confidentiality among others. The ETRR being developed has all the above features. The system can be used in areas with intermittent power supply and internet interruptions as it uses mobile tablets that have power reserve and have off line modules that can update automatically when internet is next available. The ETRR's reliance on unique identifiers ensures that there is no duplication in the system. The development stages all supported by TB CARE I are outlined below:

- In Year 4 the customization and beta testing of the ETRR was completed. Currently the system has 5 modules/engines: the Presumptive register, Health Facility TB register, MDR-TB register, Laboratory, and Reporting Engine. The engine will later be expanded to include more modules: support supervision, medicines, payments for services, community TB, and pediatric TB. The ETRR uses the new WHO 2013 case definitions.
- In quarter 1 and quarter 2 2014 a total of 481 health workers from 5 rural provinces (Masvingo, Matabeleland South, Matabeleland North, Mashonaland Central and Manicaland) and 1 urban province (Bulawayo City) were trained in the implementation of the ETRR.
- IT equipment was procured with support from TBCARE I (tablets) and USAID (desktop for laboratories) and distributed to health institutions and diagnostic laboratories participating in this phased roll-out of the ETRR.

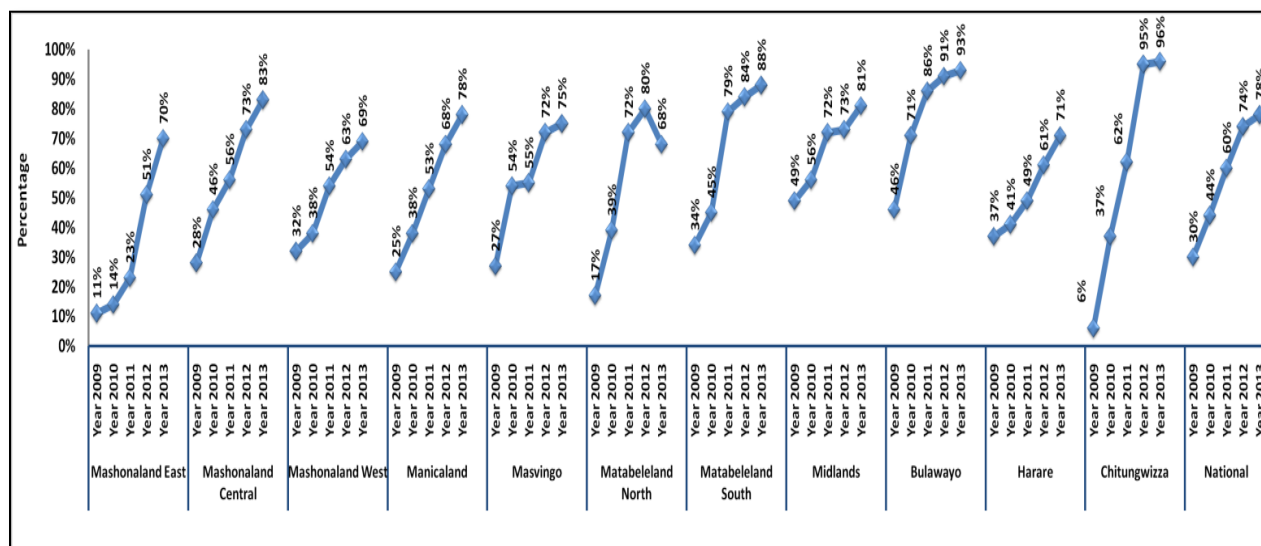
NTP is now awaiting printing of updated TB, TB-HIV, MDR-TB recording and reporting tools. There has been a delay in printing and distribution of these tools. This delay in provision of new M&E tools to health institution has also delayed the starting of implementing the ETRR. A work plan has been developed for continued phase roll out of the ETRR to all provinces by end 2015.

- TB CARE I provided technical support for the development of a protocol for a DRS in the country, primarily with KNCV assistance. KNCV supported the finalization of a protocol with The Union and other stakeholders in 2012 which was approved by the local ethics council, the Medical Research Council Zimbabwe (MRCZ). This protocol was piloted and lessons learned resulted in the decision to develop a different methodology, including Xpert and reducing the dependence of the key results on the National TB Reference Laboratory in Bulawayo for which the lack of capacity was the main bottleneck. KNCV supported the revision of the 2<sup>nd</sup> protocol. The protocol was approved by the MRCZ in July 2014. KNCV lead the development of TB-DRS standard operating procedures (SOPs) and training modules for this latest protocol. The training modules were piloted in September 2014 with favorable results. However, during this training the stakeholders indicated that the algorithm for testing PLHIV was moving towards Xpert as the primary diagnosis (replacing smear), although this is not fully implemented. International stakeholders e.g. WHO, KNCV and The Union had multiple discussions on this issue and now recommend to the NTP, given the existing limited implementation of this change in the algorithm, that smear-positive is retained as a selection criteria for all subjects with presumptive TB, including PLHIV for the purposes of the TB-DRS; the microscopy networks remain intact in all of the clusters as smear microscopy is consistently used as the primary diagnostic for persons without HIV. KNCV also supported the data management component of both protocols, including development of a data management plan with multiple in country missions and the latest data management in-country mission in

September 2014. Implementation of the survey is expected to start in January 2015 and the final results will be available by September 2016.

- TB CARE I supported performance review and data analysis meetings at national level, 5 rural provinces and 37 districts from Year 1 to Year 4. These meetings provided a platform for staff from all levels to assess TB and TB-HIV data quality and review performance indicators. The performance review and data analysis meetings contributed to improved program performance as evidenced by sustained gains in key indicators such as reduction in pulmonary TB patients with no smear results, increase in ART and CPT uptake among others. Feedback on program performance across all levels was strengthened. Comparison of data across provinces and districts during the review meetings has encouraged them to institute measures to address the glaring gaps. Figure 10 depicts an example of data analysis charts shared and discussed during national review meetings.

**Figure 12: Percentage of HIV-positive TB patients receiving ART by province and by year from 2009-2013**





**Figure 13: Health workers verifying TB data during a District TB performance review meeting in Nkayi District, Matabeleland North (Nqobile Mlilo)**



- An external NTP program review was co-funded by TB CARE I in 2011. The main findings informed the development of the National TB Strategic Plan (2015 – 2017).
- Investment in OR capacity building has not translated into tangible OR efforts. This is thought to be likely due to competing interests among health workers participating in the initial training, difficulties in identifying the right participants for training that required sustained motivation and commitment, and limited human resource capacity for mentorship. In 2010, 11 provincial health workers from each of the eight provinces and three main cities received training in protocol development and some proceeded to prepare their research proposals. Two studies supported by TB CARE I were completed and described below:
  - *Mlilo et al* in 2013, in a study published in the Public Health Action revealed that there was no difference in treatment outcomes for patients under facility based directly observed treatment (DOT) compared to patients on community based DOT. However, significantly more patients receiving family-based DOT did not have their outcomes recorded in the TB register compared with patients receiving DOT from trained community workers. As a result, the NTP has prioritized community based DOT with a focus to ensure that implementation through family observers is adequately documented.<sup>1</sup>
  - In 2012, *Takarinda et al* (manuscript submitted to *BMC Public Health Journal*), noted that taking self-medication increased patient delays to TB treatment, justifying the need to strengthen health education for improved health seeking behavior. This has buttressed the impetus for a more patient centered care, in the provision of TB and TB-HIV care services.<sup>2</sup>

<sup>1</sup>*Mlilo et al* Public Health Action; Vol. 3 No. 2, Published 21 June 2013

<sup>2</sup>*Takarinda et al* BMC Public Health Journal (Manuscript submitted for publication)

## **TB CARE I's support to GF implementation**

The planning processes for the TB CARE I supported activities took into consideration resources available from GF to avoid duplication. The annual activity plan for the NTP included all activities supported by different partners, including TB CARE I and GF. In certain activities, such as support supervision and performance review meetings, the NTP allocated specific geographic areas for support by TB CARE I and GF. For example, regarding support supervision, TB CARE I was mandated to support 37 districts in the Southern region of the country while GF supported 48 districts in the Northern region. Major activities, such as the external NTP evaluation, development of the National Strategic Plan, and national performance review meetings, were co-funded by TB CARE I and GF.

In Year 2, TB CARE I supported planning for reprogramming of \$5.0 million availed to the NTP under the GF Interim Funding which was subsequently approved for implementation. In 2012 and 2013, TB CARE I supported external consultancies for the situation analysis, epidemiological and impact assessment for updating the National Strategic Plan. Additional support was provided for the stakeholders' consultations meeting for the initial processes leading to the development of the Concept Note under the GF New Funding Mechanism. Throughout the CN development, TB CARE I local staff were actively involved in providing technical assistance. In September 2014, the CN was approved for grant negotiation. The committed funds available for the implementation period (budget upper limit) were US\$ 38,789,240.

The TB CARE I country director serves on the Country Coordinating Mechanism TB subcommittee which provides strategic direction and oversight for GF investments in the country.

## The Way Forward

Lessons learnt	Recommendations
<b>Universal Access</b>	
Limited investments in childhood TB together with lack of specific policy guidance on childhood TB and diagnostic capacities continue to undermine efforts to increase case finding.	Deliberate efforts should be made by the national response to prioritize childhood TB including contact investigation of infectious index patients, including child contacts.
<b>Laboratories</b>	
Scale up of new diagnostic technologies, such as the Xpert, contributed to improving case detection and early diagnosis of RR TB. Despite this technology, it is essential that it is implemented with supportive activities, such as training health care workers, to maximize its use and ensuring uninterrupted supply of cartridges and second line medicines, particularly XDR-TB drugs.	Current efforts to scale up use of Xpert should be complemented by investments in laboratory capacity strengthening for 1 <sup>st</sup> and 2 <sup>nd</sup> line DST and ensuring responsive logistics supply chain management for laboratory consumables and medicines.
<b>Infection Control</b>	
Experience at the 23 ITHC sites has demonstrated the feasibility of institutionalizing periodic TB screening of HCWs.	The national response should consider implementing periodic TB screening of HCWs.
<b>PMDT</b>	
Decentralization of PMDT has facilitated enrolment of more patients diagnosed with DR-TB into care. However, there remains limited capacity for patient support and pharmaco-vigilance for early detection and appropriate management of adverse events associated with 2 <sup>nd</sup> line treatment.	Additional investments should prioritize optimized training coverage on PMDT, increased patient support, strengthened recording and reporting of treatment outcomes of patients on 2 <sup>nd</sup> line treatment, and pharmaco-vigilance for early detection and appropriate management of adverse events associated with 2 <sup>nd</sup> line treatment.
<b>TB-HIV</b>	
A nurse-led provision of integrated TB-HIV care, providing a “one stop shop” approach, is feasible at primary urban care settings. The ITHC sites have demonstrated the feasibility with improvements in the uptake of HIV test among TB patients, ART and CPT among TB patients diagnosed with HIV.	Expanding decentralized and integrated TB and HIV diagnosis and care to more urban clinics and the rural settings should be considered beyond TB CARE I support.

<b>HSS</b>	
A critical success factor for TB CARE I support to the NTP was the ability to maintain a professional and collaborative working relationship and an objective focus on NTP priorities as defined in the TB National Strategic Plan.	Future support to the national response should consider sustaining and strengthening the current implementation arrangements.
Use of a dedicated specimen transport system, particularly for hard to reach areas, is critical for enhancing access to TB and TB-HIV diagnostic and follow up services.	Future investments should consider sustaining and possibly scaling up the specimen transport system to ensure universal and early access to diagnosis with increased government commitment.
<b>Monitoring &amp; Evaluation, OR &amp; Surveillance</b>	
Development of the Guide on TB Data Collection, Analysis and Use complemented with data-driven support supervision has inculcated a culture of use of data for decision making at all levels of health services.	<p>Implementation of Data Collection, Analysis and Use guidelines should be rolled out through capacity building of more health care workers at all levels of care.</p> <p>Future investments should prioritize strengthening and expansion of the ETRR to ensure its successful roll out to enable real time data collection and reporting and facilitate timely analysis for decision making.</p>
It is critical to know the country burden of drug resistant TB to inform planning and resource mobilization.	Implementation of the DRS initiated and supported through TB CARE I should be prioritized in future investments.

## Annex I: Knowledge Exchange

Below is a list of tools and publications that were developed with support from TB CARE I - Zimbabwe over the life of the project. Please contact the project staff for copies of or links to any of the listed documents.

### Technical Tools:

- National Guidelines for Community Engagement in TB Prevention and Care, 1<sup>st</sup> Edition 2014
- Training curriculum for Training TB Prevention and Care for community health workers in Zimbabwe
- Programmatic management of Drug Resistant Tuberculosis Guidelines 1<sup>st</sup> Edition 2012
- Guide for Tuberculosis Data Collection, Analysis and Use, 1<sup>st</sup> Edition 2014
- Tuberculosis Epidemiological Review and Impact Assessment - Zimbabwe

### Scientific Publications or presentations:

- *N. Mlilo, C Sandy, A.D Harries et al;* Does the type of treatment supporter influence tuberculosis treatment outcomes in Zimbabwe? *Public Health Action*, Vol. 3 No. 2, Published 21 June 2013
- *K.C Takarinda, A.D Harries, B. Nyathi et al* TB treatment delays and associated factors within the Zimbabwe National Tuberculosis program (*Manuscript submitted for publication in BMC Public Health Journal*).

### Educational materials:

#### *Calendars*

- For 2013 with TB messaging

#### *Posters*

- How can you prevent spread of TB germs
- Open window door stickers
- Site specific laminated Infection control plans for ITHC sites

#### *Pamphlets*

- Protect yourself and others from TB (*In Shona & English*)
- TB can be treated (*In Shona, Ndebele, Tonga & English*)